

Aviation News

McGRAW-HILL PUBLISHING COMPANY, INC.

DEC. 31, 1945



New Republic Giant: *This XF-12, huge high-speed, long-range photo reconnaissance plane, was unveiled today at the Republic plant in Farmingdale, N. Y. With a span of 129 ft. 2 in. and a length of 98 ft. 9 in. the XF-12 is powered by Pratt & Whitney Wasp Majors which have been equipped with turbo exhausts through which Republic engineers hope to recover up to one-third of original engine output. The firm's forthcoming Rainbow transport will be based on this ship. (Story on Page 10.)*

Research Legislation Changes Please Industry

Drastic revision of section covering patents believed to foreshadow speedier enactment of science foundation measure.....Page 7

Looking Back At 1945: A Production Review

Reconverting aircraft industry believed on upswing again after falling from world's largest to nation's 15th or 16th.....Page 9

N. Y. Feeder Line Will Develop Own Airport

Robinson Airlines, operating from Ithaca to Teterboro, N. J., has new planes on order. Cornell interested in field.....Page 13

Research Costs Rising As Production Declines

Bendix president urges careful control of financial factors to meet reconversion and development problems.....Page 15

Aircraft stocks Indorsed; Low Valuation Cited

Moody's analyzes nine companies on basis of current orders and future possibilities; Lockheed and Douglas preferred.....Page 22

ATA Polishing Air Policy Brief for Congress

Delineation of association's stand outlines reasons for single supervisory agency and barriers to surface carriers.....Page 28

Navy's new long-range bomber

uses **American Hammered piston rings**



This is the "Privateer," sea-going sister of the Army's Liberator. Like so many other Navy and Army planes, it has American Hammered Piston Rings. Because of the efficient chrome plating process used by this Koppers division, the armed forces were able to reduce their aircraft piston ring requirements by millions of rings. The Porus-Krome (Van der Horst process) wearing surface doubled and redoubled piston ring life and tripled cylinder life.



Roofing with Cool Tar Pitch

GM Style Pitch and Approved Thord felt produced by the Tar and Chemical Division of Koppers have been used on many of the large airplane factories and on many airport structures.



Aviation Tidewater Structures are Pressure-Treated

This landing dock and many other aviation structures are built with wood pressure-treated to resist decay and the attacks of marine borers and termites. Koppers Wood Preserving Division pressure-treats wood for lots and other purposes.

Buy VICTORY BONDS . . . and keep them!

KOPPERS COMPANY, INC.

PITTSBURGH 19, PA.

KOPPERS

THE KOPPERS COMPANY, INC., PITTSBURGH, PA.

THE AVIATION NEWS

Washington Observer

LINDBERGH AGAIN—Reports are current in Washington that Charles A. Lindbergh is being backed by certain high AAF officers in Assistant Secretary of War for Air. His excellent address at recent Aero Club dinner caused considerable speculation in the capital as to whether it was the first step (Aviation News, Dec. 24). Opposed to Lindbergh for the post are those who contend that his retiring nature would not make him the good contact man on Capitol Hill that the undersecretary would have to be. Even some of his friends hold that he is not a good administrator. Included in the speculation is the amount of pressure which industry will exert on the appointment.

SURPLUS REORGANIZATION—It now seems certain that further, far-reaching changes will be made in the surplus property disposal organization, and very soon. War Assets Corp., which was set up on paper as a subsidiary of the Reconstruction Finance Corp. in November, is expected to make its formal debut this week. Almost immediately thereafter, it is predicted that WAC will be separated from RFC, made an independent agency, and absorb the Surplus Property Administration—putting both policy-making and disposal operations under the same roof.

*

PERSONNEL CHANGES—When this happens, SPA Administrator Stuart J. Symington appears slated to be named Federal Lease Administrator, which will make him the RFC boss, but an RFC shock of surplus disposal operations. Lieut. Gen. Lloyd B. Gregory, now Quartermaster General, is reported in line for the chairmanship of WAC, which would put him in complete charge of all phases of the surplus problem. Sam H. Hothschild, an RFC director and original so-



lution in WAC chairman, is believed to have submitted his resignation. James A. Gorfield, deputy director for aircraft of RFC, served in that position some time ago, to be effective in January.

*

FLC STRENGTHENED—Foreign disposal will continue outside the control of the WAC, remaining under the Foreign Liquidation Commission of the State Department. However, FLC's hand will be strengthened as it will be sole submitter of sales procedures. Heretofore it has merely been RFC's agent. While given a few reins, FLC will still report back to RFC, presumably because of the connection between its work and the Export-Import Bank and Lend-Lease legislation.

GOVERNMENT OWNERSHIP—Rep. Owen Harris (D., Ark.), a member of the House Interstate and Foreign Commerce committee has warned that government ownership of transportation "is just around the corner if this country permits self-interest to control in dealing with perplexing transportation problems." The committee is preparing to start an investigation pointing toward revision in national transportation policy.

AVIATION REPORT—An aviation report of the Senate War Investigating Committee, slated for issuance shortly after Congress convenes next year, will emphasize the necessity of an aggressive aircraft research program during the peacetime years. Sen. Hugh Mitchell (D., Wash.), who heads up the committee's aviation subcommittee, already has introduced legislation to establish a National Air Policy Board to promote the maintenance of air power strength in the post-war period.



The de Havilland Hornet, 470-mph. long-range British fighter.

INDUSTRY OBSERVER — 5

NEW VOUCHTS on the way

The same engineering genius that produced the CORSAIR, fastest shipboard fighter of World War II, is now developing three new experimental types which will again raise the standards for combat aircraft. These include two radically new fighters as well as another marked advance in the CORSAIR series.

This progressive research and development program, typical of Chance Vought Aircraft for more than twenty-five years, will help maintain American security through supremacy in the air.

CHANCE VOUCHT AIRCRAFT
STAMFORD, CONNECTICUT
and all the fine qualities of modern aircraft construction

VOLUME 4 • NUMBER 23

Aviation News
McGraw-Hill Publishing Co., Inc.

December 31, 1949

Revision of Research Legislation Eases Industry's Patent Worries

Drastic changes in pending Senate measure believed to foreshadow speedier enactment of proposal to establish National Science Foundation.

By WILLIAM KROGER

Drastic revision of research legislation pending in the Senate has greatly eased aircraft industry worries over the effects of the proposed law on the present patent arrangements, and is believed to foreshadow much faster enactment of a measure for a national research policy.

Following four weeks of hearings last fall on two research bills, a subcommittee of the Senate Military Affairs Committee has introduced S. 1728, which is the result of testimony heard on S. 1298, sponsored by Sen. Hickey M. Kilgore (D., W. Va.), and S. 1283, by Sen. Warren Magnuson (D., Wash.). No hearings are expected to be held on the new bill, but it will be circulated among eminent scientists who will be asked for comments.

Final Report—It is hoped that a final report to the Senate on the research bill may be made by the end of January and that passage will follow shortly. The Military Affairs Committee still has before it the House-approved HR. 3448, by Rep. Andrew May (D., Ky.) calling for a national security research program. It is expected that the final version of S. 1728 will be presented as a substitute for May's bill.

The new bill is much the same as the original proposals put forth last summer (AVIATION NEWS, July 26), in that it would establish a National Science Foundation to coordinate, supervise and give financial assistance to research. However, great changes have been made in what once was Title III. Under the guise of making the results of Federally-financed research "freely and freely available," Title III of S. 1297 actually would

have revised the patent system. The government would have owned all patents arising from Federally-financed research and these would have been available without charge practically to all comers. **Result**—It was pointed out at the time that with the Government spending perhaps as high as \$300,000,000 annually in finance research that eventually all experimentation would be at Government expense and that, therefore, the Government would own all patents—in effect, the original bill would result in federalization of patents.

The revision eliminates the section on patents. Two paragraphs furnish the main replacement. The first declares that all research contracts shall provide that the organization doing the work make available to the Government full data on inventions, patents, etc. The second states that results of Federally-financed research "shall be freely dedicated to the public."

Exception—However, there is an

important exception made. This is that the agency financing research and development activities may, in the contract, provide "for the retention by the contractor or by the inventor . . . of such patent rights as the head of such agency deems fair and equitable and consistent with the national interest." This provision is contingent on a finding by the agency that the field in which the contractor is to work has previously been pioneered by the contractor.

This compromise over the original bill is satisfactory to the aircraft industry as it, in effect, retains the present arrangement whereby aircraft firms working on contract with the AAF and the Bureau of Aeronautics have written into each contract conditions that will govern the determination of patent ownership.

Publications—The compromise also follows almost precisely the recommendations of the industry as presented at the hearings by E. E. Gilmore, president of Sperry Gyroscope Co., although the report of the subcommittee states that the exception to the policy of "dedication" to the public were inserted as a result of the testimony of U. S. Commissioner of Patents Cramer W. Clegg.

Being studied with interest also by the industry is the provision in the new bill that "any investigation engaged in such research and development activities may pub-



SEA WOLF TORPEDO BOMBER:

This Chance Vought XF6U-1 Sea Wolf torpedo bomber was being produced by Consolidated Vultee at Allentown, Pa., when it was designated when the war ended. Powered by a Pratt & Whitney R-2800 engine it had a top speed of over 200 mph and carried a crew of three.

lish as a private individual has own findings and conclusions irrespective of such other arrangements for publication as may be made by the Administrator. Under the wording of the original bill, giving complete control to results of research to the Administrator of the National Science Foundation, some opinion held that the Government could threaten individual publications of scientific reports.

Air Industry's Job Cited by Woodhead

The aircraft industry, in the opinion of Harry Woodhead, president of Consolidated Vultee, has three important responsibilities—to maintain U. S. leadership in military, commercial and private flying.

He stated in a year-end statement that the first transcends the other two in terms of national security, but that each is interdependent.

► Problems—Woodhead pointed out the problems of industry in general have been those of reconstruction and labor unrest. Those of the aircraft industry have been more concerned with preserving the nucleus of a manufacturing and engineering organization with a year-end production at a rate of \$1,685,000,930 annually.

In reducing the aircraft industry to approximately 10 per cent of its wartime size, it has been necessary to scrap tools and machines, discontinue skilled workers of all classes and grades, close large plants, drop certain mass production techniques, eliminate much research and technological development.

► Creating Plans—Consolidated Vultee, Woodhead said, has taken positive steps to eliminate certain of these handicaps. Recently the company entered into an agreement with The Aviation Corp. to produce durable consumer goods, such as lawn mowers and farm implements at a company-owned plant in Nashville. It is contemplated that other contracts will be entered into.

Continuation of mass production activities there, Woodhead added, will provide Consolidated with the opportunity to maintain efficiencies applicable in many instances to the manufacture of aircraft.

► Confidence—"Despite many immediate pressing problems,"

Poor Planes Hindered Nazi 'chutists

Lack of suitable transport aircraft was a major cause of the poor showing of German airborne troops in the latter stages of the war, it is revealed by a survey of German airborne tactics made by officers of the Ninth Troop Carrier Command.

Gliders' lack of confidence in airborne operations also restricted German employment of this mode of warfare. His personal survey of killed planes for soldiers in the latter stages of the war, made of Malin after troops had been assembled, it was learned.

The investigating group, headed by Col. Bernard L. Mages, intelligence officer of the Ninth Troop Carrier Command, reported that in transport aircraft, the Germans were "the best" of the Allies. This was due partly to lack of productive capacity. Two

and four-engine bombers frequently were used to supplement the limited force of transport aircraft in supplying isolated ground forces.

Col. Moore declared German losses in airborne operations were very high, compared with those of the U. S. forces. One-third of all the transports in all German operations throughout the war were lost. Col. Moore said that the Germans had lost 1,000 transports with respect to being considered larger than before the war, but still only a fraction of its wartime size when it mushroomed to become the world's largest industry.

"Today it is the 12th or 16th ranking industry in the country, the Aircraft Industries Association reports, a rating which indicates that in the seven months since VE-Day it contracted even more than it had to expand in 1941 and 1942."

► Supplies—Airframe, engine and propeller manufacturers started 1945 employing 1,008,338 persons, after reaching a peak of 1,754,800 the year before when 86,389 aircraft were produced. This month, AIA figures reveal, the industry employs 150,950, and 1945 production is estimated at 47,000 airplanes.

Outfits made possible by reduced German air resistance and decreased Allied losses were already in swing early in 1945. The tempo stepped up after Germany's capitulation, and by mid-year employment was down by 250,000.

The industry entered the final two weeks of war with a monthly production rate of less than 5,000 planes, lowest since November, 1942.

► Losses—In one day, August 14, the aircraft industry lost contracts valued at \$8,000,000,000, calling for 31,000 airplanes, most to have been delivered in 1945. In two weeks, 450,000 persons were dropped from payrolls. Since then, further reductions have brought employment to what is believed to be the bottom of a curve that should rise slowly the forthcoming year.

The industry's 1945 production had an estimated value of \$6,300,000,000, that year's output, which for the first time since before the war commercial types exceeded military aircraft, is expected

certain physical laws governs material for observation.

"Clouds," like any fluid, will develop vortices," Mr. Wiggins explained. "Cold air passing over Lake Erie becomes unstable and active. The motion developed by that air is not haphazard. There is a definite pattern developed. This is the longitudinal cell," he declared. "When a Bessard cell is formed it always moves parallel to the wind and it serves to focus and converge all moisture into one current, large, dense, and cold, and of the wind can be observed and by analyzing the pattern we can predict with greater accuracy the amount of snow."

Consolidated Vultee is currently building several types of aircraft from the giant X-33 bomber for the AAF to the small four-place Stinson Vought 180 for the civilian flyer. The company also plans production of commercial and executive types, transport aircraft, new models of personal aircraft, and is engaged in military projects of a restricted nature.

Weatherman Uses Training In Gliders On Forecasts

A knowledge of air patterns stemming from his interest in sailplanes and gliders may have opened a new door to advances in weather forecasting, Bernard B. Wiggins, Buffalo weather bureau chief, believes.

He is working on a theory that air patterns over Lake Erie can be charted and used to predict accurately the extent of a snowstorm and the amounts of snow that may fall. Recent predictions of "heavy snow" that listed with reasonable accuracy the snowfall for the next 12 hours were obtained by application of the new theory, Mr. Wiggins said.

► Theory—"Formation of a longitudinal Bessard cell" over the lake as a result of the combining of

Reconverting Aircraft Industry Believed Past Low-Water Mark

Falling from world's largest to 15th or 16th in nation in seven months, it has cutback problems behind it and faces program of re-expansion.

The U. S. aircraft industry, after two years of outstanding production achievements, facing 1945 with prospects of being considered larger than before the war, but still only a fraction of its wartime size when it mushroomed to become the world's largest industry.

"Today it is the 12th or 16th ranking industry in the country, the Aircraft Industries Association reports, a rating which indicates that in the seven months since VE-Day it contracted even more than it had to expand in 1941 and 1942."

► Supplies—Airframe, engine and propeller manufacturers started 1945 employing 1,008,338 persons, after reaching a peak of 1,754,800 the year before when 86,389 aircraft were produced. This month, AIA figures reveal, the industry employs 150,950, and 1945 production is estimated at 47,000 airplanes.

Outfits made possible by reduced German air resistance and decreased Allied losses were already in swing early in 1945. The tempo stepped up after Germany's capitulation, and by mid-year employment was down by 250,000.

The industry entered the final two weeks of war with a monthly production rate of less than 5,000 planes, lowest since November, 1942.

► Losses—In one day, August 14, the aircraft industry lost contracts valued at \$8,000,000,000, calling for 31,000 airplanes, most to have been delivered in 1945. In two weeks, 450,000 persons were dropped from payrolls. Since then, further reductions have brought employment to what is believed to be the bottom of a curve that should rise slowly the forthcoming year.

The industry's 1945 production had an estimated value of \$6,300,000,000, that year's output, which for the first time since before the war commercial types exceeded military aircraft, is expected

to have a value of about \$647,000,000. This will require the employment of approximately 345,000 persons to turn out an expected 33,332 aircraft, of which 3,600 will be military, 355 transports, and 20,000 personal types. These, however, are minimum estimates, with the output of personal planes, in particular, liable to surpass 36,000.

In 1939 total production was 3,355—3,341 military, 160 transports, 3,555 personal—valued at \$280,993,000, and employment was 66,884.

► Transports—Situation in 1945 of that segment of industry concerned with transport plane production will not be as dismal as the 325 figure would indicate. Final production of post-war transports, with the exception of the Lockheed Constellation, cannot get underway on any great scale much before the summer of 1946. Meanwhile, manufacturers have orders for the reconversion to civilian use of approximately 1,600 military transports. Each four-engine transport will require from four to six weeks' work and the job will cost between \$153,000 and \$200,000 per plane.

One of the bright spots in the industry's picture for 1946 is experimental and development work. The AAF and the Navy Bureau of Aeronautics have been granted a total of \$345,000,000 to spend on research and development between now and June 30, 1946. All of course, will not go to the industry, but the size of the amount indicates that an extensive development program will continue.

Allison Engineers Find No XB-42 Engine Failure

Thorough inspection by company engineers of the two Allison Y-1718 engines in the Douglas XB-42 four-engine bomber, which for the first time since before the war commercial types exceeded military aircraft, is expected

Hawley Bowler (Nolan Aircraft Corp.) Bonshelmer (several glider described in Aviation News, Nov. 18, is something of a CAA bonhead.

CAA inspectors at Bendix Motors are puzzled as to how to type it for a certificate. Its 18-hp 1000-cc engine resembles in construction a glider, they contend. Bonshelmer refuses to apply for certification as an airplane, and says:

"To have an airplane certificate would defeat our purpose in offering an aircraft that is in a sport plane possessing the speed and maneuverability of an airplane. Apparently the Bonshelmer is neither fish nor fowl, and CAA has no certificate to issue. I believe an entirely new type of certificate will have to be drawn to cover the situation."

Pending issuance of the official Army report on the accident, cause had generally been ascribed to failure of the engines as a result of overheating (Aviation News, Dec. 3).

► Statement—Pearce declared, "The condition of the spark plugs would indicate that they had been firing up to the time of engine stoppage. Since possibility of four magneto stoppage within five minutes is very remote, we would be of the opinion that there was no complete ignition failure. The power action shows no sign of high temperature or seizure. The rear reduction gear box did not see to leak, according to the evidence we have obtained after investigation."

N.Y.U. Course Emphasizes Air Education Trend

A course is applied aerodynamics to be offered during the spring term at the Daniel Guggenheim School of Aeronautics at New York University, indicates further the trend among recognized colleges and schools of engineering to increase the emphasis on aviation.

The course will be given by Adjunct Prof. Ralph E. Upton, widely known consulting engineer. In dealing with this subject it is proposed to apply modern aerodynamic knowledge, in directly aviation engineering, to the fulfillment of immediate performance objectives.

Blohm & Voss Was Due for Larger Role

The German firm of Blohm & Voss, though it put no production airplanes into the war, established a reputation for bold and progressive designs and would have played a strong part had the war continued. Much of the company's data was useful to other firms that were in production.

The Blohm & Voss aircraft unit was organized primarily to work out design and development only. Not until near the war's end was it prevailed on to go into production. Its two- or three-place P-213 night fighter was ordered only three weeks before V-E day.

Shipbuilding Firm—American engineers observed that B & V was a shipbuilding concern of long establishment and tradition, yet

it was able to branch quickly and successfully into aircraft laboratory work. Conversion of various industries to aircraft in the United States and Britain was limited almost entirely to the production end.

A three-part report on B & V, by H. E. Wessmiller and H. P. Meyers, who served on the Technical Industrial Information Committee (TIIIC), ably surveys the company's operations and its results.

Tried Anything—A feature of B & V's program was that they were willing to try almost anything. Some of the projects they tried, like the bi-motored gliding plane, with two of the engines on the wing tips, would have been turned down in advance by almost any engineering student. But B & V operated on the theory that since history seldom appreciates projects

that don't work, some unsound-looking ones might.

Blohm & Voss could carry on speculative projects, on a vast scale because, their officials told requiring Americans, they had only to ask for any amount of money to get it, and because of forced labor they had no manpower shortage. The company was building more submarines than any other, and other vessels and more equipment, and it held such a long whip that it could and did write most of its own program. It was only in desperation that the Nazis finally got B & V to go into production—after Germany was so battered that the railroad no longer could move airplane components from plant to plant.

Huge Flying Boat—Under the accomplished Dr. Richard Vogt, B & V produced a prototype of the world's biggest flying boat, the so-called BV-356, for long-range assistance to submarines, and to service the distant bases Germany expected to win. This boat was flown, and was later landed in a remote lake and put under camouflage where, unfortunately, Allied strafers found and sank it.

Another flying boat, the BV-309, never built, was to have eight engines, and the commercial version was to carry 150 passengers on both sides of the aisle in a fuselage of 17-ft. wide and with a gross weight of 231 tons.

High-Speed Fighter—The BV-155, single-seated high altitude fighter, was found almost intact in a hangar and is now in England. Complete records on this airplane say its service ceiling is 35,446 ft., gross weight 12,550 lb. The intensive low aerial section seems to have been copied with slight changes from the United States P-51.

Officials of B & V told Wessmiller and Meyers that the company had built a number of gliding torpedoes for attack on ships, but that they were not successful. One of them had a control arm, extending downwards, when this arm touched the water, it actuated the elevators, keeping the torpedo just above the surface. It looks odd.

The company also built several gliding bombs with high aspect ratio wings. The wings were built of laminated steel plate covered with plaster of paris molding for air control. Engineers said this type of wing would be too heavy for use on airplanes.

SPECIAL AIR SERVICES

CHARTER NON-SCHEDULED INTRASTATE

New York State Feeder Line Will Develop Own Airport

Robinson Airlines, operating from Ithaca to Teterboro, N. J., has two F-24's and two Cessnas with two eight-passenger Beechcrafts on order; Cornell may build its field.

Plans for development of a new Ithaca-Cornell airport at Ithaca, N. Y., to serve as the home base for Robinson Airlines, intrastate carrier operated by C. R. Robinson, Ithaca, have been disclosed. It is believed to be the first case of an airline developing an airport for its own use, since the end of the war.

First stage of development calls for an operations building and hangar, parking lot, taxi strip and ramp and one 1,500-ft. runway on 50 acres now held, with options on additional land to permit expansion to 500 acres as this becomes necessary. The new field will be about five miles from downtown Ithaca, and about 1½ miles from Cornell University which has indicated a strong interest in the establishment of the new field.

University Plans—Currently Ithaca has a small airport about 2½ miles from downtown, where the intrastate airline is operating until opening of the new field. Dean S. C. Hallinger, of the Cornell engineering college, has indicated that the university at a later date contemplates constructing engineering and hangar buildings at the new airport, for use of the university's graduate school of aeronautical engineering.

Robinson, a veteran private flyer, has used a plane extensively in connection with his business, the manufacturing of Vibroshock mounts for aircraft instruments. After a number of years, he decided that his duty commuting from Ithaca to New York, by plane could be expanded into an intrastate airline which would benefit his home town and eventually would develop into a profitable enterprise. He began operations last April with two Fairchild F-24 four-passenger planes. Oct. 8 he

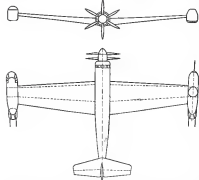
flew 15 in New York, and 14 in Rochester.

Accommodations will be further improved with the delivery of two 8-passenger Beechcraft twin-engine 185 aircraft planes now on order. With these Robinson expects to maintain a 160-mph. block-to-block speed. With completion of his new facilities at Ithaca he plans to install a VHF communication system between the airport there and his New York base at Teterboro, N. J., to maintain closer plane-to-ground and base-to-base communication.

New Field—The new field is expected to be in operation early next summer, about the time Robinson receives the Beechcrafts. He plans to develop the Ithaca-Cornell airport as a private type/terminal as well as the home base for his airline. A temporary wooden, heated hangar and passenger station at the old field will be transferred to the new field to supplement an 80-by-80 ft. concrete and steel administration building and hangar which will be built there.

While Robinson is a consistent advocate of turf fields for light planes, he plans to surface the first runway of his new field with asphalt over gravel on a 60-ft. 90-ft. strip, with two turf strips 110-ft. wide adjoining. Two strips also will be paved.

Passenger Handling—Robinson



Flying Dumbbell—This exclusive sketch of a proposed German "swallow" bomber—observation—supply plane, carrying personnel in nacelles mounted at each wingtip, is another clever example of postwar designs by Germany's Blohm & Voss, possible aircraft company which tried anything and nearly everything for the Luftwaffe. The P-183 (P for project), developed on paper only, was intended to carry the pilot in the left nacelle, a navigator-radio operator-engineer in the fuselage, and front and rear gunners in the right nacelle. The design was to be powered by one air-cooled engine, or two liquid-cooled engines in the central fuselage, driving concentrating three-blade propellers. Arm was to achieve maximum field of fire. When pilots objected they might feel awkward flying from a wing-tip, and P-183 was installed as additional nacelle on the famous BV-141 "nuclear" plane for tests, and never reported to formal research. (Another sketch on Page 16.)



Robinson Airlines departure: Passengers board a Robinson Airlines Cessna at Ithaca, N. Y., for New York. By next June the Robinson co-ownership expects to be operating Beechcraft 8-passenger planes from its own new airport at Ithaca.

completes the need for efficiency in loading and off-loading passengers, and has set a requirement of 10 minutes for passenger and baggage off-loading into waiting surface transportation at its terminal points. He believes that efficient handling of passengers and baggage at small close-in airports can offset much of the advantage of higher speed operation by the major airlines, on any except long trips.

Daily Flights Begun by Oregon Line

Using two four-place converted Cessna Transports, Oregon Airlines has begun daily flights between Portland, Eugene and Bend, Ore., the company's owner and manager, W. A. Ward, announces. The 10-minute flight from Portland to Eugene is made twice daily, the second flight continuing over the Cascade Mountains to Bend, Salem and Albany en flag stops. The company uses Trout Lake Airport in the forested area.

More Flights—Ward reports three more Cessnas will be acquired as soon as possible, with consideration being given to the use of amphibian aircraft along the Willamette River next spring.

Arizona Airways, Inc., Has Extensive Plans

Arizona Airways, Inc., has made extensive plans for a daily air transportation service for ultimate points, according to R. O. Nelson, president.

Founded in 1943 to operate a Navy flight training school at Safford, the company is capitalized at \$1,000,000, of which \$350,000 is fully subscribed. The stock is held by Arizona business and civic leaders, together with a small minority holding by Transcontinental & Western Air, Inc.

Franchise—A franchise has been granted the company to fly passengers, mail and express between Phoenix, Glendale, Safford, Clifton, Wilcox, and Tucson, and applications are on file with the Arizona Corporation Commission to extend service to Bisbee, and for a franchise to operate between Phoenix and Yuma with an alternate stop at Ajo. Also, TWA has transferred to Arizona Airways an irrevocable certificate to operate between Phoenix, Prescott, Kingman, Acton, and Boulder City

and Las Vegas, Nev., subject to approval of CAB.

The corporation owns the stock of Grand Canyon Scenic Tours, Inc., which holds a franchise for air service between Nogales, Ariz., and the state line, leading to Salt Lake City, and serving Tucson, Phoenix, Winslow, and Grand Canyon, between Phoenix and Boulder Dam via Prescott and Kingman, and between North Rim, Grand Canyon and Boulder Dam via South Rim, Grand Canyon and Pecos Ferry.

Arizona Airways will use Lockheed Super two-engine 14-passenger planes, of which three are now on order at \$53,500 each.

Easton, Md., Airport To Be Licensed Soon

Maryland Airlines, which had to suspend its Washington-Easton flights recently because of the State Aviation Commission's refusal to license the Easton Municipal Airport for commercial operations because of a lack of facilities on the field, will resume flight there soon.

Maxim Hathaway, president of the airline, told the commission it would station an attendant at the field daily except Sunday from 8 a.m. to 8 p.m. and would provide a crash truck, fire extinguisher and first aid kit. In addition, the Cities Service Oil Co., lessee of the field, and fuel pumps, an administration building and hangar, fueling facilities and radio equipment will be installed in the "very near future."

Temporary License—On this basis the commission voted to grant the field a temporary Class II license, effective January 1. If an inspection within a reasonable time shows the promised facilities have not been provided, the license will become void. Edward H. Pasquare, director of the commission, said the Easton field would be qualified for a Class III license when all the facilities listed by the lessee had been installed.

Busline Operating Service in Louisiana

Southern Airlines has been organized as an affiliate of Southern Trailways to operate aircraft between Monroe and New Orleans, with stops at Alexandria and Baton Rouge. The first flight was made in mid-December. At Monroe, tickets are being sold at the Union Bus Depot.

Baltimore Men Plan Charter Base

Plans to use the former Curtiss-Wright Airport in Northwest Baltimore as a base for a charter cargo airline, as well as to convert surplus military transport planes for cargo and passenger transport have been announced by Edward M. and Frank H. Knapp, new owners of the field.

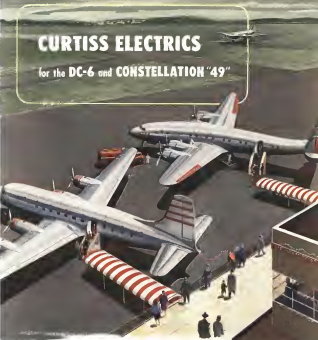
They purchased it recently from Curtiss-Wright Corp. for a reported \$200,000, and have engaged Col. George E. Hutchinson of the "Flying Hutchinson" family as their technical adviser. The Knapps are partners in John C. Knapp & Sons, Baltimore woodworkery company.

Facilities—The 284-acre all-rod field now has two large hangars. One of these will be used by the Knapps for their conversion and charter work. They plan a number of smaller ones for private planes. The first conversion job on a C-47 now is nearing completion at Baltimore Municipal Airport and will be used as a demonstrator, to take orders from feeder airlines and charter operators. A second was flown on Dec. 22, by Col. Hutchinson and his daughter Janet, a former WASP. The company plans to acquire a number of C-47s and four-engine C-54s for conversion, some for the company's own use and some for resale. Interiors will be redesigned to be adaptable for carrying passengers, general cargo, refrigerated cargo or even livestock, and the conversions will be marketed as "Knapp Convertibles."

The Knapps were successful bidders for the field after the recent death of Col. William Tipton, lessee of the field since 1933, who had been given first option to purchase it, when Curtiss-Wright decided to sell it for tax purposes.

Charter Line Licensed To Operate From Montreal

Canadian Aeromarine Ltd., Montreal, has been granted a license by the Canadian Air Transport Board for a non-scheduled commercial charter air service carrying passengers and goods, from Carderville Airport, Montreal, to spots objections of other operators at such a review of the airport, the CATB found that Montreal is sufficiently large to allow another operator in the field.



the Scene is any large airline terminal. The aircraft are the new Douglas DC-6 and the Lockheed Constellation "49"—bringing to the commercial airlines new standards in passenger comfort—featuring the Curtiss Automatic Synchronizer for quiet, simplified engine control and Curtiss Aerodynamic Braking by reverse thrust for shorter, smoother landings.

CURTISS ELECTRIC
PROPELLERS

A Division of Curtiss-Wright Corporation

AS WESTERN AS

THE

Joshua

Springing from the warm, kaleidoscopic desert of the great Southwest, the great Joshua tree must measure arms to dwarf its neighbors. This domed, mophead flares of the desert floor command the eyes of all travelers and the focus of their comments.

To the hardness and color of America's foremost desert playgrounds, Western Air Lines carries vacationers fleeing winters worth. For Western is the airline to America's wilderness of parks and recreational areas—in winter and summer. As the West's own airline, Western has filled the pioneer's role in building up what needed air service for the people of the West. Today, 57 key industrial and agricultural communities in 7 states and Western Canada are served. With delivery of large, faster planes only a few weeks away, Western needs only the approval of new applications to inaugurate service to many more communities, bring improved air transportation to many others.

WESTERN AIR LINES
AMERICA'S PIONEER AIRLINE

General traffic office: 510 W. 5th Street, Los Angeles 14

PRODUCTION

Industry Faces Rise in Cost Of Research As Output Drops

Beech, Bendix president, warns that continued U. S. aviation progress depends largely on careful control of all financial factors to meet reconversion and development problems.

The aviation industry, going into the new year, faces the fact that while production is coming down, research costs will be going up.

Ernest R. Beech, president of Bendix Aviation Corp., points out that the necessary for exploring entirely new phases of aerodynamics, together with jet, gas turbine and rocket propulsion and guided missiles will entail greatly increased financial appropriations for research.

Production Cutback—The aviation industry in 1946 will be re-aligning its resources to place more emphasis on research, development and sales in the scale necessary to sustain our national air power leadership, broaden the utility and economy of commercial aviation and spur the already promising growth of private flying.

Beech points out that total 1946 aircraft production is expected to fall below \$1,300,000,000—or to approximately six percent of peak annual output of \$18,000,000,000 during wartime.

This estimated volume of the industry's first full peacetime year,

while about three times the pre-war annual volume of \$235,000,000 in 1939, will not be sufficient, Beech says, to support the extensive and continuing research programs that will be needed to uphold America's supremacy in the air, which should be a prime objective in overall national plans for aviation's future.

Costs—The extent of American progress in military aviation development will be determined to a considerable degree by our ability to keep all costs under reasonable control," Beech said. "If the pressure of labor demands for sweeping wage increases forces aviation costs beyond profitable bounds, our future air supremacy will be in grave danger.

"The American public is prepared to pay for our air supremacy as a 'wart' peacetime insurance policy, but government, industry and labor must give the taxpayer value received to keep our air forces up to date, and to preserve a strong, developing and growing American aircraft industry."

Bendix Plans—Beech empha-

'Take Home' Pay Cut

V-J day resulted in a 54 percent drop in average "take home" wages in the airplane industry, bringing total average earnings of aircraft workers in September to \$44.02 weekly, or 12.1 percent the same month last year, according to a report issued by the Bureau of Labor Statistics.

"Take home" pay in aircraft engine manufacturing dropped 6.6 percent following V-J day to an average of \$44.02 weekly in September, or 23.3 percent below average "take home" earnings of workers in September, 1944.

Hourly earnings of workers in the airplane industry in September were slightly (0.1 percent) above September, 1944, rates, while hourly wages at the aircraft engine industry during September were 10.5 percent below September, 1944, hourly wages.

and that in the wake of terminations and cutbacks, all companies comprising the aviation industry face new demands on their capital, capabilities and resources. Reconversion costs in themselves will be enormous. According to present estimates, Bendix Aviation, for example, will spend approximately \$25,000,000 for purchase and modernization of facilities needed to carry out peacetime plans for peacetime operations. The company is re-arranging plant facilities for greatly increased production of automotive equipment, including numerous new and improved starters, brake and carbure-



NEW FLYING BOAT FOR EMPIRE ROUTES:

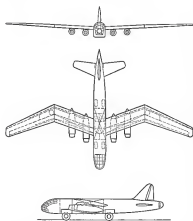
The new four-engine Sunderland, built at Short Bros' works at Rochester, England, in British production's attempt to meet the requirements of overseas transport immediately. A naval version of the

Short's Sunderland patrol plane, the Sunderland will accommodate 24 day passengers and 16 at night. Powered by four Bristol Pegasus engines, the ship cruises at 180 mph at 4,750 ft.

cells, as well as other devices.

Wider Field.—At the same time, Brehm said, they are broadening activities in the consumer field to apply engineering and production knowledge of the radio division in the development and manufacture of radio and radar equipment for aircraft.

Bendix also is committed to extensive research and development to speed the progress of private flight with plans for production of more efficient and economical flight and navigation instruments and low-cost engine components for the personal airplane.



SUPERSONIC WING EXPERIMENT:

This aircraft sketch shows the German four-jet P-102, in which Blohm & Vois proposed a combination sweep-back and sweep-forward wing to minimize loss of lift due to shock waves at supersonic speeds. On the accepted theory that shock waves pass over the wing at large angles to the longitudinal axis of the airframe, B & V assumed that if the wing itself were angled, either forward or backward, in conformity with the shock wave angle, the desired result might be achieved or approached. The project apparently was set aside beyond the drawing board stage. Whether the company was able to prove any merit for the project is not known, but American engineers, investigating the D & V program for the U. S. Technical Industrial Intelligence Committee (TIC), considered it highly interesting. These reports were made by R. E. Weisiller and H. P. Meyers.

SPA Report Details Magnesium Cut

Consumption of magnesium in aircraft manufacturing rose from a pre-war 1,400 tons annually to 54,000 tons during the war, and will slide back to between 4,000 to 14,000 tons during the post-war period, according to the Surplus Property Administration's report to Congress on magnesium plant disposal.

The estimate of post-war consumption is predicated on a military procurement program of 5,000

planes a year, SPA said. It probably will be the lower figure in view of the challenge of cheaper aluminum alloys and the application of alloy steel, wood and plastics to aircraft construction, it added.

Reconversion.—SPA recommended that six government-owned plants be maintained as magnesium producers, to feed aircraft manufacturers in the event of another war emergency. The six plants, which would insure a capacity of 127,000 tons annually, are located at Spokane, Wash.; Volcano and Prosper, Tex.; Plainsville and Luckey, Ohio, and Canton, Ore. They would be sold or leased with the stipulation that they be kept wholly or partially in production of magnesium, and that the other-than-magnesium production be kept convertible to magnesium on 60-day notice.

Although, with aggressive research and market development, consumption of magnesium will mount to an estimated 20,000 to 30,000 tons annually, there is no possibility—in view of the drastic curtailment in aircraft output—that demand will even remotely approach present output capacity of 223,000 tons, SPA said.

Plant Disposal.—SPA recommended that seven magnesium plants should be disposed of as quickly as possible for other purposes. These plants, with a total capacity of 148,000 tons annually, are located at Ladington, Devon, and Marysville, Mich.; Las Vegas and Globe, Nev.; Austin, Tex.; Carlsbad, N. Mex.; Manteca, Calif.; Wingdale, N. Y.; and Lake Charles, La.

5-Year Aircraft Supply Kept On Hand By RCAF

The Royal Canadian Air Force is keeping five years supply of aircraft on hand. It was disclosed in Parliament by Air Minister Colin Gibson.

He also said the RCAF is experimenting with jet planes, which he termed the aircraft of the future. In dealing with RCAF estimates, the Air Minister stated it would cost \$93,800,000 a year to keep up the post-war air force of 20,000 men operating in ten squadrons—three bomber, three fighter, three transport and one photographic squadron. In addition, Canada would have an auxiliary air force of 10,000 men.

Division of Robot Research Scored

Division of guided missile research between JAAF and Army Ordnance was the reason the U. S. lagged in the development of guided missiles, according to James B. Riddle, one of the civilian experts who appraised German research work after VE Day.

Riddle, president of the National Aeronautical Corp., Camden, N. J., told the Aviation Dynamics and Maintenance Association recently that the public should demand increased appropriations for research in aeronautics.

Next Models.—In Germany, he said, he saw a missile designed to travel to the M. 8 in 17 minutes and electronically controlled so that it would land within an acre of the nose of New York. The man-

side he said, would have been ready for use against New York in six months, and had already been tested recently against Antwerp, with devastating results.

Summarizing other electronic developments he presented an electronic automatic pilot weighing not more than 25 lbs. and costing between \$100 and \$200 would be ready for small plane use within two years. He forecast that within five years, through combined use of ground programs and electronic control devices, a plane could use a single receiver, weighing not more than 25 lbs., to serve every function of automatic heading, altimeter, navigation, traffic control, and navigation.

Cord Buys Control of Chicago Firm

A voice out of aviation's past appeared recently with disclosure that E. L. Cord has purchased control of the Chicago Electric Manufacturing Co., indicating he may be emerging from virtual business retirement.

Cord was the starry petrol owner, whose such of American Airlines' tentative history revolved. In conjunction with this activity, he acquired control of the predecessor units now comprising the Aviation Corp. In 1934, controlled by Secretary of Commerce, Cord was disbanded to the holders of American as a stock dividend. Aviation Corp's present ownership of American Airlines' stock is a direct outgrowth of Cord's early activity.

controlled American Airlines. Nevertheless, the CAB ordered the Aviation Corp to sell the bulk of such airline holdings.

It is known that Cord continued as the largest individual stockholder of American Airlines. Last reports showed him as owning about 8,600 shares of this carrier's common stock.

Cord also remained a substantial stockholder in Colonial Airlines. His interests in this smaller airline are above 11,000 shares or better than 4 percent of the total stock outstanding. Colonial originally was part of the American Airlines stock ownership. When it was disbanded to the holders of American as a stock dividend, Aviation Corp's present ownership of American Airlines' stock is a direct outgrowth of Cord's early activity.

Unused Aircraft Plywood

Put on Sale by RFC

A total of 1,260,000 sq. ft. of surplus aircraft hardwood plywood, unused and in good condition, is being offered for sale by the Reconstruction Finance Corp. Standard range of widths and lengths are available in thicknesses varying from 1/8 inch to 1 1/4 inches.

The supply, located in the RFC warehouse at Fort Snelling, Minn., may be inspected through Dec. 31, for orders to be placed must be submitted by that date. Minimum quantity of the material that will be sold is one crate.

Ryan Surveying Civilian Markets

Military program will be carried over, affording expanding basis for new operations.

Ryan Aeronautical officials are studying the commercial and private airplane markets with a view to centering this manufacturing field.

Earl D. Prudden, vice-president, pointed out that Ryan is continuing its military airplane programs into peace-time. New developments for the Navy have been in progress for some time and will be carried along on what is expected to be an expanding basis.

Other Products.—Manufacture of specialized stainless steel products, principally exhaust manifolds and alloy aircraft engine accessories in which Ryan has been a pioneer, is continuing on a sizeable scale though not as high a level as in war-time.

While looking toward the commercial and private airplane markets, Ryan was one of the few warplane production units in the country which continued on an accelerating manufacturing scale right up to V-J Day, and the transition to peace-time production in this field will be somewhat slower than some other companies.

Labor Cutback.—Ryan has readjusted its total personnel and production to the demands of peacetime requirements, but now has 1700 employees, which is substantial compared with pre-war years and represents about the staff the company feels can be maintained in the immediate future.

Ryan went through a progressive development during the war, having gone from building small numbers of relatively simple primary training planes to design, engineering and volume production of Harry Fordell jet-powered, propeller-driven fighters of extremely advanced design.

Convair Announces Dividend

Consolidated—Vulcan Aircraft Corp. will pay a dividend of 50 cents per share on February 15 to holders of its common stock of record Feb. 1, President Harry Woodhead has announced. Action on preferred dividend has been deferred pending decision on a plan for redemption of the preferred stock.

In fiscal 1946, Consolidated paid a total of \$2 per common share.

BEST BET IN WINTER TIRES

**ADDED GRIP ON
SNOW AND ICE**

**ROLL SMOOTHLY
ON PAVEMENT**

THE greatest all-purpose snow and ice tire built for aircraft is the Goodyear Ice Grip tire. So pilots report after thousands of war and postwar flights under Arctic conditions.

There's better control on ice, or on snow-packed runways when your plane is equipped with Ice-Grips. Thousands of strong claws bite into the ice as the Ice-Grip tire makes its landing—for embedded in the rubber tread are thousands of tiny, high-tensile steel springs.

(30,000 in a large-size tire). There's no lumpiness, no bumpiness; the tires roll smoothly on concrete or other pavement, because the coil springs are solidly molded into the rubber. They won't tear out and bulge through your wings or fuselage.

Further, Ice-Grip tires give added traction on slippery turf runways.

These multiple advantages make Goodyear Ice-Grips the choice for airlines whose flights

cover several climate zones. They contribute importantly to safety and confidence.

Ice-Grips are an outstanding type in the great Goodyear line of airplane tires.

FOR ADDITIONAL ASSURANCE, trust on Goodyear Multiple or Single Disc Brakes. They give long service, safe and smooth action.

Manufacturers, Airline Operators,
Distributors, Dealers, and Private
Flyers DEPEND ON GOODYEAR for—

RIMS • TUBES • WHEELS • BARRIS • AIRCRAFT
 HOSE • HYDRAULIC HOSE • HYDRAULIC PACKING
 • GASKETS • GYRTIES • LINE BAPTS • SUCTS •
 OVERHAUL SANTS • FUEL AND OIL CELLS •
 RUBBERIZED FABRIC • RUBBER JOINTS • AIR-
 FLOW CLIPPING • FLUORIN • FLUORIN •
 FLUORIN • HYDRAULIC PRESS PADS • MOLEDO
 RUBBER PRODUCTS • KROHNO PROPELLER BOOTS

©2007 Pearson Education, Inc. All rights reserved.



Business Strategy International

GOOD YEAR

THE GREATEST NAME IN RUBBER

AVIATION PRODUCTS

at Warburton, 1999; 2000; 2001; 2002; 2003; 2004; 2005; 2006; 2007; 2008; 2009; 2010; 2011; 2012; 2013; 2014; 2015; 2016; 2017; 2018; 2019; 2020; 2021; 2022; 2023; 2024; 2025; 2026; 2027; 2028; 2029; 2030; 2031; 2032; 2033; 2034; 2035; 2036; 2037; 2038; 2039; 2040; 2041; 2042; 2043; 2044; 2045; 2046; 2047; 2048; 2049; 2050; 2051; 2052; 2053; 2054; 2055; 2056; 2057; 2058; 2059; 2060; 2061; 2062; 2063; 2064; 2065; 2066; 2067; 2068; 2069; 2070; 2071; 2072; 2073; 2074; 2075; 2076; 2077; 2078; 2079; 2080; 2081; 2082; 2083; 2084; 2085; 2086; 2087; 2088; 2089; 2090; 2091; 2092; 2093; 2094; 2095; 2096; 2097; 2098; 2099; 2100; 2101; 2102; 2103; 2104; 2105; 2106; 2107; 2108; 2109; 2110; 2111; 2112; 2113; 2114; 2115; 2116; 2117; 2118; 2119; 2120; 2121; 2122; 2123; 2124; 2125; 2126; 2127; 2128; 2129; 2130; 2131; 2132; 2133; 2134; 2135; 2136; 2137; 2138; 2139; 2140; 2141; 2142; 2143; 2144; 2145; 2146; 2147; 2148; 2149; 2150; 2151; 2152; 2153; 2154; 2155; 2156; 2157; 2158; 2159; 2160; 2161; 2162; 2163; 2164; 2165; 2166; 2167; 2168; 2169; 2170; 2171; 2172; 2173; 2174; 2175; 2176; 2177; 2178; 2179; 2180; 2181; 2182; 2183; 2184; 2185; 2186; 2187; 2188; 2189; 2190; 2191; 2192; 2193; 2194; 2195; 2196; 2197; 2198; 2199; 2200; 2201; 2202; 2203; 2204; 2205; 2206; 2207; 2208; 2209; 2210; 2211; 2212; 2213; 2214; 2215; 2216; 2217; 2218; 2219; 2220; 2221; 2222; 2223; 2224; 2225; 2226; 2227; 2228; 2229; 2230; 2231; 2232; 2233; 2234; 2235; 2236; 2237; 2238; 2239; 2240; 2241; 2242; 2243; 2244; 2245; 2246; 2247; 2248; 2249; 2250; 2251; 2252; 2253; 2254; 2255; 2256; 2257; 2258; 2259; 2260; 2261; 2262; 2263; 2264; 2265; 2266; 2267; 2268; 2269; 2270; 2271; 2272; 2273; 2274; 2275; 2276; 2277; 2278; 2279; 2280; 2281; 2282; 2283; 2284; 2285; 2286; 2287; 2288; 2289; 2290; 2291; 2292; 2293; 2294; 2295; 2296; 2297; 2298; 2299; 2300; 2301; 2302; 2303; 2304; 2305; 2306; 2307; 2308; 2309; 2310; 2311; 2312; 2313; 2314; 2315; 2316; 2317; 2318; 2319; 2320; 2321; 2322; 2323; 2324; 2325; 2326; 2327; 2328; 2329; 2330; 2331; 2332; 2333; 2334; 2335; 2336; 2337; 2338; 2339; 2340; 2341; 2342; 2343; 2344; 2345; 2346; 2347; 2348; 2349; 2350; 2351; 2352; 2353; 2354; 2355; 2356; 2357; 2358; 2359; 2360; 2361; 2362; 2363; 2364; 2365; 2366; 2367; 2368; 2369; 2370; 2371; 2372; 2373; 2374; 2375; 2376; 2377; 2378; 2379; 2380; 2381; 2382; 2383; 2384; 2385; 2386; 2387; 2388; 2389; 2390; 2391; 2392; 2393; 2394; 2395; 2396; 2397; 2398; 2399; 2400; 2401; 2402; 2403; 2404; 2405; 2406; 2407; 2408; 2409; 2410; 2411; 2412; 2413; 2414; 2415; 2416; 2417; 2418; 2419; 2420; 2421; 2422; 2423; 2424; 2425; 2426; 2427; 2428; 2429; 2430; 2431; 2432; 2433; 2434; 2435; 2436; 2437; 2438; 2439; 2440; 2441; 2442; 2443; 2444; 2445; 2446; 2447; 2448; 2449; 2450; 2451; 2452; 2453; 2454; 2455; 2456; 2457; 2458; 2459; 2460; 2461; 2462; 2463; 2464; 2465; 2466; 2467; 2468; 2469; 2470; 2471; 2472; 2473; 2474; 2475; 2476; 2477; 2478; 2479; 2480; 2481; 2482; 2483; 2484; 2485; 2486; 2487; 2488; 2489; 2490; 2491; 2492; 2493; 2494; 2495; 2496; 2497; 2498; 2499; 2500; 2501; 2502; 2503; 2504; 2505; 2506; 2507; 2508; 2509; 2510; 2511; 2512; 2513; 2514; 2515; 2516; 2517; 2518; 2519; 2520; 2521; 2522; 2523; 2524; 2525; 2526; 2527; 2528; 2529; 2530; 2531; 2532; 2533; 2534; 2535; 2536; 2537; 2538; 2539; 2540; 2541; 2542; 2543; 2544; 2545; 2546; 2547; 2548; 2549; 2550; 2551; 2552; 2553; 2554; 2555; 2556; 2557; 2558; 2559; 2560; 2561; 2562; 2563; 2564; 2565; 2566; 2567; 2568; 2569; 2570; 2571; 2572; 2573; 2574; 2575; 2576; 2577; 2578; 2579; 2580; 2581; 2582; 2583; 2584; 2585; 2586; 2587; 2588; 2589; 2590; 2591; 2592; 2593; 2594; 2595; 2596; 2597; 2598; 2599; 2600; 2601; 2602; 2603; 2604; 2605; 2606; 2607; 2608; 2609; 2610; 2611; 2612; 2613; 2614; 2615; 2616; 2617; 2618; 2619; 2620; 2621; 2622; 2623; 2624; 2625; 2626; 2627; 2628; 2629; 2630; 2631; 2632; 2633; 2634; 2635; 2636; 2637; 2638; 2639; 2640; 2641; 2642; 2643; 2644; 2645; 2646; 2647; 2648; 2649; 2650; 2651; 2652; 2653; 2654; 2655; 2656; 2657; 2658; 2659; 2660; 2661; 2662; 2663; 2664; 2665; 2666; 2667; 2668; 2669; 2670; 2671; 2672; 2673; 2674; 2675; 2676; 2677; 2678; 2679; 26

PERSONNEL

Harwood Named Head Of Gillies Aviation Corp.

O. P. Harwood (photo) has been named president of Gillies Aviation Corp., Bethlehem, Pa. Harwood, who recently resigned as regional administrator of the Civil Aeronautics Administration in Region 1, is well known in the aviation industry.

Gillies Aviation

has represented Glenn Aircraft Engineering Corp. for the past several years as sales representative and consultant. Harwood was in the Air Corps in World War I.

Three Washington men, all formerly with the War Production Board, have joined the staff of the Foreign Liquidation Commissioner. Alfred W. Lewis, Allen C. Rankin and John H. Knecht all were formerly with the aircraft division of WPB and are now in the aircraft division of FLC.

Charles C. Martin has been appointed a vice president of Rheem Research Products, Inc., Baltimore. John S. Goring, formerly Naval Air Traffic Coordinator in the Pacific island area, has returned to Railway Express Agency to be superintendent of public relations.

J. D. Fresno has been appointed traffic manager for Pan American Airways' Alaska region, replacing R. D. Smith, who has been transferred to San Francisco as division sales manager. Fresno has been serving in Naval Air Transport Service as a lieutenant commander.

Nider J. Keith Davis (photo) has been named sales manager of the aircraft sales division of Robinson Aviation, Inc., at the Technical, M. J. Air Terminal. The division will handle products of the Stinson Division of Consolidated-Vultee Aircraft Corp., and Aeromac Aircraft Corp.

Mich. Louis Miller of Lock Haven, Pa., has been appointed engineer-in-charge of airports for the Pennsylvania State Department of Transportation. He was recently discharged

from the AAF where he served as an airport engineer and had charge of the construction of the field at Cambria. Before the war he was associated with the Pennsylvania state highway department.

Cok Mike Murphy has returned to Findlay, Ohio, where he will head the aviation department of the Ohio Oil Co. He has been released from active duty with the glider section of the Air Force. Before he entered the AAF Murphy was the national and international staff flying champion. He operated aircraft at Kalamazoo, Ind., and Findlay.

Capt. Ray W. Wells has been assigned to handle special phases of TWA's operations in Europe, with headquarters in Dublin. Capt. Clifford V. Abbott, until recently a major in the Flying Training Command of the AAF, has assumed Wells' former duties in Kansas City.

Raymond W. Towles (photo), formerly associated with Winston, Strawn & Shaw, Chicago law firm, has been appointed a regional director of properties for TWA. He will have charge of real estate negotiations in TWA's central region, including A. R. Thompson, who recently was assigned to TWA's central section at Kansas City.



C. L. Johnson, chief research engineer for Lockheed Aircraft Corp., became the new president of the Los Angeles aviation chapter of the Society of Automotive Engineers. The outgoing president was Arthur R. Kestel, chief engineer of Douglas Aircraft Co.

Frank Brennan has been named chief of the public relations special projects section of American Airlines System. Brennan was in the public relations section of American before going on active duty during the war.

F. O. Morgan has been named Los Angeles sales supervisor for American Airlines. He has been with American seven years in both operations and traffic. Morgan has just been released by the Navy.

V. R. Stephens has been named Washington State department traffic manager for PCA. Stephens has been with



V. C. Schurtenazer

Two Plane Firms Make Appointments

Appointments of a new vice president and a new treasurer were announced last week by aircraft firms.

V. C. Schurtenazer becomes vice-president in charge of finance for Consolidated-Vultee Aircraft Corp., succeeding Francis A. Cullen, who resigned recently. Schurtenazer, controller for the company since 1941, was vice-president in charge of finance for Vultee Aircraft, Inc., prior to the merger of the two companies.

Donald S. Grubbs has been appointed treasurer of the Luscombe Airplane Corp. of Dallas and Tremont, N. J. Prior to joining Luscombe, Grubbs was with United States Steel Corp. as audit supervisor. He conducted audits of all records of subsidiary companies as well as directing the several audit functions of such companies.

Edward S. Sullivan (photo) has joined the TWA staff as manager of the agency and interface department. With PCA for 11 years, Sullivan was a representative of the Air Transport Association during the war and acted in establishing the original air travel priority system. He later served as coordinator between the airlines and ATC.





LELAND ELECTRIC COMPANY
Engineering Department Report

ASSIGNMENT:
To provide airborne power units for radar, automatic pilot, gyroscopic compass, fluorescent lighting, and to operate from main electrical system of aircraft.

SOLUTION:
Leland engineers designed special light weight, highly efficient inverters converting direct current to 400 or 800 cycle alternating current with controlled frequency and voltage regulation. Radio interference was held to a minimum.

NOTE TO AVIATION DESIGN ENGINEERS
This example of Leland Creative Electrical Engineering indicates our ingenuity and ability to solve your specific problem with custom-designed power equipment.



It's all in the call for Leland

CREATIVE ELECTRICAL ENGINEERING...

call for Leland

THE Leland ELECTRIC COMPANY
DAYTON, OHIO • IN CANADA, LELAND ELECTRIC CANADA LTD. • GRIFFIN ONTARIO

Survey Indorses Aircraft Stocks, Citing Undervalued Position

Moody's analyzes nine companies on basis of current orders and future possibilities; preference for Lockheed and Douglas indicated in consideration of large backlog.

The undervalued position of aircraft equities was outlined recently by Moody's Stock Survey with the recommendation that investors acquire shares be purchased for speculation not merely in expectation of a recovery from the "seemingly unimaginative conservatism" of existing market prices, but rather in the belief that the industry does have a future in earnings, "and that present prices are low in relation thereto."

Since Moody's report was released, aircraft prices have experienced a sharp rally. It will be recalled that on October 5, *Airweek News*, in an exclusive analysis, pointed out the disparities between existing market prices and working capital balances of many of the aircraft companies. Moody's approach is similar but in addition projects earnings potentialities for 1944.

Analysis.—This advisory service analyzes nine aircraft companies and estimates that this group has military contracts of about \$900,-

000,000. It is estimated that this business will be spread over the two years 1940 and 1947, and it is stressed that this is not advanced as the best. Annual business from the airlines is placed at about \$132,000,000 to be delivered yearly for 1946 and 1947. Replacements are estimated at \$180,000,000 annually for the 1947-1950 period.

Assumptions.—With this assumed estimate of future volume, Moody's, with understandable qualifications, projects 1946 earnings on a conservative basis for the nine companies which it expects to comprise the group which will handle the available military and commercial business.

Preference.—Among the companies presented, preference was indicated for Lockheed and Douglas, primarily because of the large backlog of commercial and military orders. Boeing was considered attractive, too, because of the company's successful war record. Grumman, because of its prestige as a supplier of naval aircraft, also

was favored. Martin occupied a place on the list since its "265" may prove very popular with the airlines. Republic was accorded speculative attraction because of the order it has received for its "Rainbow" luxury transport. Boeing's has indicated its recommendations for the above companies in the order named with the qualification that each issue will remain in the speculative category.

Individual statements and discussions are presented for all nine companies. The most pertinent comments in each instance are:

Boeing.—"The stock has elements of speculative attraction for those able to follow carefully the manufacturing progress and public acceptance of the helicopter."

Boeing.—"Although Boeing had no reported year-end earnings of any company in this group, we do not believe that will be the case hereafter. Boeing should remain one of the most prominent suppliers of military aircraft."

Conservative View.—"Although we do not advance commitments in the shares at this time... we believe, nevertheless, that the stock will respond to any favorable developments concerning airline orders or new military models."

Douglas.—"In future markets we estimate that these shares will be valued at a higher price earnings ratio, more in keeping with the company's excellent record and promising future."

Grumman.—"We regard the company highly and believe the stock of this moderately organized and financially sound aircraft producer has better-than-average attraction."

Lockheed.—"The prestige of the company is growing and its extensive sales and promotional efforts add strength to its industrial position."

Martin.—"Martin occupies a better-than-average position in the industry but this has been discounted partially by its unusual strength in recent markets."

North American.—"Although North American had a good war record, its commercial prospects are not now very clearly defined. Capitalization (\$435,000 shares) is much larger than other companies in this group."

Republic.—"Based out of Republic's activities definitely improves the company's position. Consequently, we feel this issue has attraction among the lower priced aircraft specialities."

New Lightplane Radio Equipment Will Embody Many Advantages

Forthcoming sets will provide better communications with lighter weight and lower cost; one firm has one-package 50-watt transmitter for use at small airports.

By ALEXANDER McURELY

Personal aviation radio equipment just going into production on the plains of several well-known manufacturers may be expected to provide private pilots with far better communications equipment than previously, with the added advantages of lighter weight and lower cost.

Typical of the new plane radio equipment which is forthcoming are products of Lear, Bendix, and a newcomer in aviation radio, Hallamers Co., Chicago. Bendix, the Airco Manufacturing Corp. has announced a 50-watt ground radio station for use on small airports, which is offered as a complete one-package package except for antenna poles.

Details.—The new equipment includes:

The Lear P-Xer. A transmitter about six inches square, and weighing less than 15 lbs. complete with all accessories will sell for approximately \$125. The transmitter operates on 3105 kc. with approximately 5-watt output. The set receives all major stations and control towers from 160 to 445 kc. It is designed for operation from a 18-volt ship's battery. A small powerpack weighing 7 lbs. 6 oz. can be installed anywhere there is space, and is best advantage of center of gravity conditions in the plane. The powerpack operates from the aircraft battery supply, eliminating necessity for recharging dry batteries.

The set operates efficiently as a fixed antenna, although trailing antenna is recommended for cross-country operation. It is equipped with a simultaneous range filter so that range signals can be reduced when listening to voice broadcasts. With an AML loop the set can be used as an aural aid direction finder. Another feature of the set used by the manufacturer is an interphone with which pilot and

passengers can talk to each other.

The Bendix Fourweight. Line previously described (*AVIATION NEWS*, Nov. 5) will be designed for very high frequency transmission. A new VHF transmitter is designed for use in conjunction with low-drawings (340-600 kc.) receivers already installed in many planes. This will permit the pilot to transmit on VHF and hear replies and range on the low frequency receiver, which may later be replaced by a VHF receiver and an omni-directional range attachment. The transmitter includes crystals for the two VHF channels now assigned for non-scheduled

operation (131.9 mag for CAA supercol towers and 131.7 mag for CAA survey ground stations) with provision for addition of three more crystals for other VHF channels which may be designated in the future when the increased number of flyers causes congestion on the two channels. A transmitter in the Flightweight line is a combination of the VHF transmitter and a low frequency receiver, although presently this will later be replaced by a VHF receiver.

The Hallamers. CA-2 Skyfone weighs less than 15 lbs., complete with power supply, antenna and all other accessories, and is expected to sell for around \$125. The company, known before the war for its amateur radio equipment and for military radio, has taken two aircraft radio engineers from the industry, James Riddle, formerly of RCA, and Rudy Garfield, formerly of Stinson, and Capt. A. R. Applegate, formerly of Wright Field aircraft radio laboratory, to head up its aircraft radio sales and engineering organization.

Special features of the Skyfone, which includes a five-tube receiver and a 10- to 13-watt transmitter are: all switching done by electronic means actuated by a push-

Aircraft Share Statistics
Working Assumptions for 1940

Company	*October 1944		Nov. Current		Average Earnings		Earnings (Estimated)		**Revised Approx. Price
	In Amt.	% of Amt.	In Amt.	% of Amt.	1940-41	1940-42	1944	1945	
Boeing	\$25.42	82.5	\$5.09	90.06	\$0.06	\$0.06	\$0.06	\$0.06	25
Douglas	48.52	38.43	7.19	69.95	1.79	2.1	1.79	2.1	31
Cons. Value	40.54	17.25	9.15	4.41	2.76	3.1	2.76	3.1	21
Boeing	122.47	34.43	1.68	11.11	1.11	1.11	1.11	1.11	11
Grumman	49.07	28.67	5.29	0.74	2.79	3.2	2.79	3.2	32
Lockheed	49.39	27.47	8.35	0.75	0.22	0.40	0.22	0.40	22
4141	28.58	9.64	1.68	1.68	1.68	1.68	1.68	1.68	168
North Amer.	12.14	11.19	2.80	0.58	0.42	0.58	0.42	0.58	15
Republic	17.27	11.41	2.54	48.31	1.38	1.38	1.38	1.38	17

Key: *Per share equity is not current assets includes—pays as EPE value; debt and preferred stocks were subtracted.

+Includes special reserves, i.e., for contingencies, etc.

No allocation made in any case for carry-over of (1) unmet costs; (2) profit or loss on (2) net operating losses.

**Market as of December 27, 1945.

Source: Moody's Stock Survey.



DRUG STORE SELLS CUBS

Cocaine, soda, prescriptions and more—airplanes. Webb's drug store, St. Petersburg, Fla., has added Piper Cubs to its other line of merchandise. Picture shows G. Fred Hocking, St. Petersburg, Fla., left of sign, buying first Cub sold in store. Harry Playford, Piper distributor, is right. Air, at right. Sign quotes price of \$2,125 delivered, plus flying instruction presumably to solo, or \$2,010 f.o.b. from Leach Haven, Penna.

to-talk button on microphone; antenna is connected through a matching unit at the point where it enters plane; a fully shielded cable between the matching unit and the receiver greatly reduces noise in receiver and is expected to eliminate need for special bonding and shielding of antenna system of most planes, area-position switch permits pilot to select 200- to 400-kc aircraft band, standard broadcast band will transfer receiver from regular antenna to dimension landing loop and place voice-cage filter in operation. One switch position automatically tunes receiver to tower frequency without changing the setting of tuning dial, for convenience when coming in for a landing.

Normal transmitter operation is on 3105 kc, but a dual antenna matching unit can be provided to permit operation on 6210 kc, in addition. The microphone uses a diaphragm unit developed for the Signal Corps, which permits full

transmitter modulation without introducing background noise from the plane's motor. Two-way radio operation following the CAA's own production will use miniature tubes and operate from dry batteries, for planes not equipped with an electrical system. They are a receiver, and a two-way radio.

► **Aviation Manufacturing Corp.**, at Kansas City, is building a two-channel push-button control 80-watt ground station which may be used either for point-to-point, ground-to-plane communication or as a lower control station. It can be operated by a third-class radio operator, since the push button and a hand or foot push-to-talk switch are the only operation controls required. The station has frequency ranges for both day and night operation in the 2- to 5-meg band, and channels for operation from 230 to 419 kc, and 115 to 112 meg are also available. It is designed so that it may be installed on either transmitter or receiver or both in remote locations from the operator if desired.

► **Conversion**—Outlook appears favorable for early conversion of ground equipment to VHF by CAA, it is reported, with most of the control towers ready for VHF some time in January, and many ground stations expected to be ready by March. As a result it is expected that many of the radio manufacturers will soon join Bendix in the offering of VHF transmitters because of the non-static advantages of the high frequencies. Actually all of the manufacturers are understood to be developing such transmitters.

3 Crashes Blamed On Misjudgment

Misjudgment and disorientation of the part of pilots was blamed for three of five aircraft accidents investigated by the Civil Aeronautics Board. Failure of the elevator control system rendered another aircraft partially uncontrollable. The origin of the fifth accident was undetermined.

Summaries of the mishaps and Board findings follow:

► **EL PASO TEX.** Commercial Pilot Ben Harrison, El Paso, Texas, 14-10-54, was killed when he attempted the landing of a Douglas C-47A at El Paso, Texas, following a low-altitude approach. The aircraft was a 1941 model, with 10,000 hours of flight time. The aircraft was a 1941 model, with 10,000 hours of flight time. The aircraft was a 1941 model, with 10,000 hours of flight time.

► **LOS ANGELES, CALIF.** Commercial Pilot Robert E. Jones, Los Angeles, 14-10-54, was killed when he attempted the landing of a Douglas C-47A at Los Angeles, California, following a low-altitude approach. The aircraft was a 1941 model, with 10,000 hours of flight time. The aircraft was a 1941 model, with 10,000 hours of flight time.

► **CALIFORNIA**, Probable cause of the accident of a light aircraft, which crashed on the 14th of October, 1954, was misjudgment of the pilot's altitude when the aircraft was in the final approach.

► **NORTH ALABAMA**, S. C. Commercial Pilot Charles E. Jones, Jr., 14-10-54, was killed when he attempted the landing of a Douglas C-47A at North Alabama, following a low-altitude approach. The aircraft was a 1941 model, with 10,000 hours of flight time. The aircraft was a 1941 model, with 10,000 hours of flight time.

► **CALIFORNIA**, Probable cause of the accident was failure to control maneuvering speed. The aircraft was a 1941 model, with 10,000 hours of flight time. The aircraft was a 1941 model, with 10,000 hours of flight time.

► **CALIFORNIA**, S. C. Commercial Pilot Charles E. Jones, Jr., 14-10-54, was killed when he attempted the landing of a Douglas C-47A at North Alabama, following a low-altitude approach. The aircraft was a 1941 model, with 10,000 hours of flight time. The aircraft was a 1941 model, with 10,000 hours of flight time.

► **CALIFORNIA**, Probable cause of the accident was failure to control maneuvering speed. The aircraft was a 1941 model, with 10,000 hours of flight time. The aircraft was a 1941 model, with 10,000 hours of flight time.

► **INDIANA**, S. C. Commercial Pilot Charles E. Jones, Jr., 14-10-54, was killed when he attempted the landing of a Douglas C-47A at North Alabama, following a low-altitude approach. The aircraft was a 1941 model, with 10,000 hours of flight time. The aircraft was a 1941 model, with 10,000 hours of flight time.

► **CALIFORNIA**, Probable cause of the accident was failure to control maneuvering speed. The aircraft was a 1941 model, with 10,000 hours of flight time. The aircraft was a 1941 model, with 10,000 hours of flight time.

► **CALIFORNIA**, S. C. Commercial Pilot Charles E. Jones, Jr., 14-10-54, was killed when he attempted the landing of a Douglas C-47A at North Alabama, following a low-altitude approach. The aircraft was a 1941 model, with 10,000 hours of flight time. The aircraft was a 1941 model, with 10,000 hours of flight time.

► **CALIFORNIA**, Probable cause of the accident was failure to control maneuvering speed. The aircraft was a 1941 model, with 10,000 hours of flight time. The aircraft was a 1941 model, with 10,000 hours of flight time.

► **CALIFORNIA**, S. C. Commercial Pilot Charles E. Jones, Jr., 14-10-54, was killed when he attempted the landing of a Douglas C-47A at North Alabama, following a low-altitude approach. The aircraft was a 1941 model, with 10,000 hours of flight time. The aircraft was a 1941 model, with 10,000 hours of flight time.

► **CALIFORNIA**, Probable cause of the accident was failure to control maneuvering speed. The aircraft was a 1941 model, with 10,000 hours of flight time. The aircraft was a 1941 model, with 10,000 hours of flight time.

Inspection Backlog To Be Broken Soon

CAA appointment of 1,000 agents from industry expected to bring early relief in certification jobs.

Appointment of approximately 2,000 manufacturing inspection representatives and aircraft maintenance inspectors from the aviation industry to supplement the small force of CAA inspectors is expected to relieve in large measure the backlog of unattended aircraft inspections which has been building up steadily in recent months.

Civil Aeronautics Administrator T. P. Wright has announced that the "Designated Aircraft Maintenance Inspectors" will be named from among A & B mechanics and licensed repairmen and operators. Under the new setup the designated men will be qualified to give any private or non-scheduled commercial airplane its annual inspection or its inspection after major repairs or alterations.

Without requiring the services of a CAA inspector, the CAA points out that there are only 124 aircraft inspectors employed by CAA, "a number too small to give prompt service to today's 37,684 civil aircraft and obviously inadequate for the more than 196,000 planes expected by 1960."

► **Appointments**—It is understood that the CAA inspectors will recommend qualified persons in their respective regions for these appointments, which will be made as fast as the CAA inspectors make recommendations. Failure of any man in the U. S. to have an adequate number of maintenance inspectors within a reasonable period presumably will place the responsibility squarely on the shoulders of the CAA inspector for the neglected territory.

The manufacturing inspection representatives will be appointed likewise by the 50 CAA factory inspectors from among the employees of the various aircraft manufacturers who hold CAA production certificates. The representative will be authorized to issue NC airworthiness certificates for new airplanes coming off the line, indicating that each plane complies with plans and specifications previously approved by CAA engineers. Each plane will be the manufacturer must carry an individually numbered airworthiness certificate, with the number painted

New Personal Plane

The revised prototype of North American Aviation's personal plane will seat four persons with ample baggage room, and will have a speed well in excess of 190 mph. It is reported without company confirmation that the plane will have a 580-hp engine, will be powered with a 280-hp engine, and will seat four between 16,000 and 20,000. However, since North American is understood to be aiming at a market which will approach mass production, the rumored price may be too high.

ed on the plane's tail and wings.

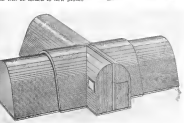
► **Lead Heavy**—Burdens of new aircraft certification is beginning to be felt increasingly by the small number of CAA inspectors at many of the plants are stepping up their production toward goals of several times their pre-war production. In addition many new manufacturers have entered the field, creating an additional inspection load.

The new procedure will give some advantage to the established manufacturer who has been producing planes long enough to obtain a CAA production certificate, indicating that facilities, materials and quality control methods followed are satisfactory. Hereafter there will be issued to new plants

only an submission of a detailed written report by management showing how it meets CAA requirements. Present holders of production certificates, however, also will be required to file such a report before any of their aircraft can be named as factory inspection representatives.

► **Early Action**—It is understood that a detailed program on appointment of the representatives will be forwarded to the manufacturers some time during the week of Jan. 5. The new program is assured of an enthusiastic reception by the personal plane manufacturers, many of whom have customers waiting to fly away in loaded planes which have not yet received their airworthiness certificates from the CAA. Having their own inspection representatives will make it possible to complete inspection details as soon as the plane is finished, without waiting for arrival of a CAA representative.

In the future CAA factory and maintenance inspectors will perform largely a spot-checking job to insure compliance with CAA requirements.



NOVEL HANGAR:

One novel solution to the personal plane hangar problem is the "Stinger T-nager" design of the Airport Builders Co., Chicago. The hangar structure, built of aluminum throughout, has no doors, but slides apart as shown in the sketch. The wing sections of the hangar travel on ballbearing front wheels which wrap up to a point where the opening will permit the plane to be taken out or hangared.

Pent-Up Interest Cited By Wright

Keen post-war national interest in personal aviation is evidenced by the fact that student pilot certificates issued by CAA in 1943 totaled 74,886 as compared with 61,469 in 1944, and only 20,393 in 1939 the last normal pre-war year.

Statistics showing that civil aviation is on the threshold of a tremendous expansion were made public in the year-end review of the nation's aeronautical developments made by Civil Aeronautics Administrator T. F. Wright. **Manufacture**—Manufacturers of personal planes have indicated to CAA they have orders for 46,000 planes as against 44,444 in 1944, (the best production year previously for civil aircraft). The number of registered civil aircraft jumped from 12,000 to 20,000 in 1945 as the result of sale of surplus military planes to civilian owners.

Wright pointed to the increased emphasis placed on personal flying development by CAA, through appointment of special assistants to the administrator and through the work of the Non-scheduled Airway Committee for CAA. He reviewed the work done thus far in liberalizing regulations affecting the private pilot, including physical and written examinations.

Progress—The fostering of air-marking and the emphasis on the larger number of small personal flying fields in the proposed federal air support program were CAA's part in encouraging establishment of aviation courses in thousands of elementary and

high schools, including flight experience programs in a number of the schools, providing an average of four hours flight instruction to participating students, was described. Wright also pointed to the aid given by CAA to thousands of discharged Army and Navy aviators in facilitating issuance of civil pilot certificates, and sponsoring refresher courses for applicants for A & E licenses, and in issuing booklets explaining requirements for starting small airports, flying schools or obtaining licenses.

Canada Separates Medical Set-Up

Plans to appoint a medical officer to handle civil aero-medical requirements entirely divorced from the medical section of the Royal Canadian Air Force, announced recently by the Canadian Department of Transport, are regarded as a victory for all types of civilian flying in Canada.

The separation has been advocated by the Canadian Air Transport and Industries Association, and has been pointed up by complaints of some veteran bush pilots (Aviation News, Sept. 17 and 24) that they would be forced to give up flying if they had to comply with RCAF medical regulations.

Visitors—Other changes in regulations, covering foreign aircraft, affect private flying. Pre-war regulations have been eased and aircraft brought to Canada for health or pleasure purposes need report only at the first customs port entered. No further reporting is re-

New Lockheed

Lockheed Aircraft Corp. is expected to flight test its new two-place experimental pusher personal plane soon, perhaps by the time this is read. The plane which is said to have performance comparable to the very slow-flying, one-place Little Dipper, is to be tested at the Mojave Desert away from the public eye. Top Lockheed officials still are uncertain whether the company will begin lightplane production at this time, pending on an undetermined market, or delay until markets are more clearly defined.

acquired until leaving Canada when making customs is surrendered at port of exit. Previously, a sailing foreign aircraft had to report at every customs port on its route. There are now eight airports in the Detmarweg where customs officers are in attendance during scheduled hours and some 45 to 50 where customs and immigration officers are within reasonable distance. While the 10-day prior notification of arrival at Canadian customs authorities has been recalled it is expected that advance notice notification will be required at points where customs and immigration men are not regularly in attendance.

National Flying Farmers Name McGill President

Officers of the National Flying Farmers association were elected at Stillwater, Okla., recently as Oklahoma members announced plans for completing incorporation immediately, and extending the organization to other states.

New officers are Gene McGill, Alvin, Okla., president; Arvid Tennille, Buffalo, Okla., vice-president; and R. M. Irvin, Woodward, Okla., secretary-treasurer. Mrs. Todd Davis, Minco, Okla.; Cecil Neville, Chickasha, Okla., and Forrest Watson, Thomas, Okla., president of the Oklahoma Flying Farmers were named directors.

Three places on the board of directors are left vacant to be filled from other states as soon as the organization is extended beyond Oklahoma.

Consensus—The association will hold its first national convention in Stillwater the first week in August.



ROUTES FOR TOUR:

Stops on the various routes to Miami for the first post-war private flying tour sponsored by Gulf Oil Corp., Oct. 26 to Jan. 26, where participants are to receive free gas and oil, are shown above.

Wiggins Airways Offers Flight Training Scholarship

A flight scholarship of eight hours dual instruction and a solo flight will be awarded each month, to members of the Massachusetts Civil Air Patrol, by Wiggins Airways, operator of buses at Norwood, Boston and Westfield. Joseph Garand, president of Wiggins, and the scholarships will be given over a month for an unlimited period in appreciation for the work CAA is doing to develop aviation.

L. Col. John E. Shennett, staff CAP wing commander, and the scholarships will be awarded on the basis of a monthly written examination to be conducted by CAP officers. Flights will be in Piper Cub trainers.

City Council to Oppose Gearhart, Ore., Field

Protest against proposed operation of an air strip on a golf course property at Gearhart, Ore., will be filed by members of the Gearhart City Council with the city on the ground that the strip is adjacent to a beach and will menace public safety. Jess Lerback, of Seaside, has proposed to purchase the land necessary for the strip, largely outside the city limits. A flying service at the proposed strip would be managed by his son, Jess Lerback, Jr., veteran Army pilot. Gearhart officials are suggesting an alternative development of an airport with a 1,400-ft. runway near the north city limits.

Briefing For Private Flying

Feasibility of buying the trim little Culver-built TQ14 target planes for use as one-place personal planes if they are put into surplus is interesting a number of pilots. The planes cost the Army over \$4,000 apiece, and were powered with 150-hp. Franklin engines, essentially the same engine now used in the Stinson Voyager 155. The target planes were built of plastic-plywood, had electrically-operated tricycle landing gear, and each plane was test flown by a pilot before delivery for radio-controlled work. Under radio control the TQ-14 would cruise at 160 mph., had a ceiling of about 17,000 ft. and carried a three-hour fuel supply. Whether the CAA would certificate the plane without considerable change, and how many of them might be delivered surplus and when, are questions still to be answered. Possibly the stripping of the remote-control radio equipment would present a problem in redistribution of weight which could only be met at great expense, but the removal of that installation would result in an increase in useful load capacity. The plane would be cheap of interest to local private pilots who wished to travel at speeds approaching airline speed, and is willing to pay the operating cost of the 150 hp. engine.

SAFETY IN PLANE DESIGN—Aircraft Owners and Pilots Association speaks out in a recent bulletin to its membership about "What manufacturers have not done" to improve the safety of personal plane design. Admitting many manufacturers are moving toward improved safety in future designs the bulletin calls for immediate action on planes now in production specifically to improve cockpit visibility and to improve the design of the cockpit and the location of the controls for landing. Quoting insurance statistics that three out of every 14 air planes are involved in some sort of accident each year, AOPA declares that "the first step toward real safety in flying, we believe, is for all manufacturers to build safety into their airplanes." The bulletin suggests employment of a safety expert by the personal plane manufacturer, in aid in plane design.

1,000TH POST-WAR CUB—Perry Pilot William T. Piper, Sr., 64, who also was to be president of Piper Aircraft Corp., Look Haven, Penn., was to be able off from his home airport last week, accompanied by his wife, to deliver a new plane to the Wallace Aircraft Co., Miami, Fla. The plane, the 1,000th post-war built Piper Cub Special, bore registration No. NC18770, which Piper believes is the highest Cub number yet issued. Incidentally the plane was the 16,000th CUB to be built since 1930, a production record certainly equaled by any other light-plane maker.

COLUMBUS BASE FOR PARKS—Oliver Parks' Aircraft Sales & Service organization has arranged to lease a large hangar at Fort Columbus, municipal airport for Columbus, Ohio, as soon as it is vacated by the Navy and will set up another in its chain of five operations in midwestern states. Accommodations will include: plane storage in a heated hangar 120 by 160 ft., all grades of fuel, daily mechanical service from 8 a.m. to 3 p.m., and fuel, oil and hangar service 24 hours a day. Shops, display rooms and plane storage will be arranged in the main hangar with a provision room, and a small office for the salesmen. Other Parks operations are at East St. Louis, Ill., Chicago, Indianapolis, and Kansas City.

EXPANDS AIR CENTER—Mandel Brothers' department store, Chicago, has expanded seventh floor its Air Center, where it sells Piper Cubs, to include a line of flight clothing aviation books, navigation equipment and plane accessories. Airport operators may take notice of the merchandising of aviation accessories, and related equipment by downtown department stores and display and sell their own similar lines more effectively.

SKYWAYS INN—At Tulsa, Okla., airport, John Harrison has announced opening of Skyways Inn, providing meals and rooms at the airport for cross-country pilots who do not wish to leave the field. The inn consists of a one-story or two-story building with a large kitchen. Aviation research experts as a valuable sideline revenue for any airport operator in the next few years.

—Alexander McNulty



PILGRIMAGE TO REPUBLIC:

Twenty-five Michigan distributors and dealers, and purchasers of Republic four-place Seabee amphibians, recently made an aerial "dappery tour" to the Pictured Rocks, L. I., pilot to inspect the production of the Seabees, now getting started. The group is shown above in front of one of the five Seabees in which they made the trip, together with a group of Republic officials.

ATA Polishing Up Strong Brief On Air Policy for Congress

Definition of association's stand outlines reasons for specialized federal supervisory agency and retention of barriers to surface carrier participation.

By MERLIN MICKEL

The airlines' stand for continued regulation of air transport by a specialized and separate Federal agency, and retention of barriers to surface carrier participation, is presented strongly in a definition of policy being polished into final draft by the Air Transport Association for submission to Congress.

The statement will be the air carrier's answer to the transportation inquiry requested by Chairman Lea of the House Interstate and Foreign Commerce Committee as the forerunner to possible revision in Federal transportation law (American News, Aug. 27).

Argument.—ATA contends that the basic theory of the Civil Aeronautics Act of 1938 in putting air transport under its own regulatory agency—the Civil Aeronautics Board—is as good now as it was then. One authority, it feels, should have control over private flyers and commercial operators and foreign and domestic aviation operations.

Furthermore, the Civil Aeronautics Authority has had seven years of experience and is charged with the development of aviation, as well as its regulation. Assuming that an outside regulatory body would be based on the Interstate Commerce Commission, the shift would put that agency into foreign fields in which it was inexperienced, and give it the job of regulating all forms of transportation and providing some ATA may lose from uncertainty that would result from a combination of regulating authorities would for affect any public plan that might be articulated therewith.

Integration.—Integration of air transportation with surface carriers, the airlines declare, would result in few if any economies. The public has benefited from the

growth of new forms of transportation during the last 30 years, and their feeling is that competition between forms of transportation has more incentive value than that between like types of carriers with the same technology.

Common ownership, control or operation of air and surface carriers would have little bearing on coordination of their services, and ATA sees integration as a poor method of obtaining post service agreements when they cannot be by voluntary action.

Overseas Transport.—The airlines see no peril to the merchant marine from overseas air transport, nor do they believe the country's position in marine transportation would improve if the steamship companies are allowed to engage

in air transportation. They say growth of air transport would be hampered by a policy of integration, and definition of the limit to which surface carriers can get into the air is up to Congress rather than a regulatory agency. The present regulation in the Civil Aeronautics Act is seen as better than any other yet suggested.

Considerable attention in the preliminary draft of the statement is devoted to the question of federal aid to transportation, ATA pointing out that government aid to scheduled air transport has been far less than that to other mass forms of transportation, except pipelines, and has been far exceeded by the benefits to the public. The scheduled airlines are hopeful they will become independent of government support as soon as possible, but they feel that all carriers engaged in public airports and airports serving the airlines will be charged to the airlines, which do not use them all. Example is the great number of ports that will serve only private flyers.

Regulation.—The expansion of air transport, ATA points out, that rates affect earnings and their regulation is reflected in encouragement of private capital investment. CAB's regulatory authority here is seen as adequate, and the electric power industry need no need for change in the Civil Aeronautics Act on this score.

Taxation, however, is a different matter, and ATA is hopeful

Contract Data Sought

While believing that for the present there should be a minimum of regulation of contract carrying by air, the Air Transport Association feels that CAB should be gathering information on this activity as it has on the industry's expected rapid growth.

Attention was called to the shape of air transport in the airline's statement of policy on federal regulation now being put in final draft in answer to the transportation inquiry conducted by the House Interstate and Foreign Commerce Committee.

That Congress will set soon to eliminate the possibility of multiple taxation and provide tax benefits and special treatment among the states in which the airlines operate. The hope also is expressed that the states abandon location of aviation schools. The Association, pointing out that airlines are not characteristic of air transportation, repeats its well-known stand for economic as well as safety regulation of far-flung air transport by a federal regulatory agency rather than the states.

approaching" the status of a scheduled carrier, he cautioned Page about reusing, on an unscheduled basis, the service it ceased to render April 27 after crash of a Page plane at Washington National Airport.

Discussing regularity of service, the examiner cited several Board demands that continuous operation is a relative term, and commented that Page's service "unavoidably" could be construed as "regular" in the Board view. Cusick felt, however, that while in some respects Page offered features similar to conventional airline service, it lacked "many of the outstanding attributes of an air transportation service as generally conceived by the public" among them a schedule timetable.

Operations.—In finding Page a common carrier, he cited the substantial number of scheduled operations, the relatively few contract passengers carried compared with those from the general public, and other factors. Page's contract operations, he said, "appear to have served no purpose other than to cushion the new venture against a possible financial loss."

Although the first investigation at an nature dangled by the Board, the Page case is the second in which an examiner's report has

been made. A similar study of Trans-Maine Airlines, of New York, was called July 17, and an examiner's report, now before the Board, subsequently recommended that the Board and that Trans-Maine had not failed to comply with the sections of the Act involved (AVIATION NEWS, Oct. 15).

New Mexican Line Set To Commence Service

Financed by Alberto R. Paul, son of Mexico's former minister of Finance and secretary of Foreign Affairs the southern republic's newest airline, Aerovías Internacionales de México, is expected to begin operations this month.

According to Alvin P. Adams & Associates, Los Angeles aviation consultants and advisors to AIM, initial service will be between Mexico City and Interlomas, adjacent to the U. S. border at San Diego.

franchise.—The company's Mexican franchise authorities is to fly from Mexico City via Guadalajara, Oaxaca, and Guaymas, with a spur line from Guadalajara to Acapulco, West Coast resort and resort. The airline's principal base, Paris, is owner of a hotel in Mexico City.

ICC Opposes McCarran Bill Proposal

The Interstate Commerce Commission believes that transportation history indicates railroad involvement in other-than-railroad categories would be contrary to public interest.

The position is stated in ICC's observations to the Senate Commerce Committee on Sen. McCarran's revised "All American Flag Line" bill. McCarran's first measure for a continental U. S. company in international aviation would have allowed only airlines to participate in such an enterprise. The revision, however, would carry out recommendations to the committee by Juan Trippe, president of Pan American Airways, and permit all domestic carriers and operating lines to avail as such a company.

Comments.—"We see no close connection," ICC commented, "between domestic transportation

by land or water within the U. S. and international air transportation."

"We doubt whether common carriers by rail would have any objection to the proposed community company involved in the (McCarran) bill would give qualified approval to such acquisition, on principle, no question whether the public interest would be served."

The Commission recalled in its copy-page letter that for the past several years it has encouraged legislation to impose restrictions on expenditure of railroad funds for outside activities. It reported that the McCarran measure he wanted to require approval of ICC—as well as CAB—on stock subscriptions by railroad interests in the so-called "All American Flag Line."

Page Airways Given O.K. by Examiner

A CAB examiner, reporting in the Board's first investigation of a non-scheduled air carrier, has found that Page Airways, Inc., of Rochester, N. Y., while a common carrier within the meaning of the Civil Aeronautics Act, did not operate in violation of certification requirements.

Examiner William F. Cusick recommended that the Board dismiss its investigation, started May 17 to determine whether the Page operations were beyond the scope of CAA's exemption of non-scheduled operators. Page operated an interstate service between Rochester and Miami, on what it claimed was a charter basis.

Interpretation.—Cusick's report to the Board gave a liberal interpretation to the regularly-of-service clause in CAB's non-scheduled exemption regulation, on the basis of unanimous testimony that Page flight departures were irregular. By pointing out that Page's service was "regularly



TACA'S COLOMBIAN HEADQUARTERS:

The building at Bogotá is headquarters for TACA de Colombia, which flies main routes in Colombia and international routes to Venezuela and Ecuador.

CAB Review Stresses International Flying

New emphasis on the international phase of commercial aviation appeared in the Civil Aeronautics Administration's year-end review by Administrator T. P. Wright.

Both technical and policy matters were included. In the former category, tests were completed by CAA technicians on surplus military planes that the airlines can use on over-ocean flights, and growing use was made on newly authorized international routes. In the latter, CAA reported progress toward establishment of world-wide airways facilities "of a uniformly high standard," through work with the Provisional International Civil Aviation Organization at Montreal and direct talks with foreign government representatives.

Schedules—On schedule for execution before next June 28 was expansion of CAA offices at Lima and Rio de Janeiro and establishment of offices at Stockholm, Madrid and San Juan.

Approach control for instrument landings, agreement with the airlines to place direction-finding equipment at key airports pending completion of VEF ranges and instrument landing systems, and cooperation with radar for civil use were listed among technical ad-

visions designed to expedite domestic and international airline operations.

Expansion—Wright's review pointed out that the airlines had ordered some 590 new transport planes to increase their total fleet more than 300 percent, and said need for the equipment was demonstrated by the increase in number of air passengers carried domestically, which rose from 4,988,898 in 1944 to 7,700,000 in 1945, compared with 1,874,000 in pre-war 1939.

C.E. Woolman Named President of Delta

Delta has a new president and new name as the result of action by the board of directors. Formerly Delta Air Corp., the corporate name of the carrier was changed to Delta Air Lines, Inc., and Collett Roperman ("C. R.") Woolman, vice-president and general manager, was advanced to the presidency. The directors also created a new position of chairman of the board, a post which will be occupied by C. E. Faulk, president since 1935.

A widely known aviation figure, Woolman organized the first commercial airplane cargo dating company in 1925 at Monroe, La. In 1939 he organized Delta Air Service to carry passengers from Dallas to Jackson and later Birmingham



Delta President: C. E. Woolman, vice-president and general manager of Delta for the past few years, has been named president of the airline by the board of directors. He succeeds C. E. Faulk, who becomes board chairman

and Atlanta. The company, of which a crop dusting department still is an important unit, reorganized as Delta Air Corp. in 1935, with Woolman continuing as vice-president and general manager.

Expansion—Delta now flies as many passenger miles in 10 days as it did in all of 1936. On Dec. 1 it inaugurated service over the 1,850-mile route from Los Angeles to Chicago. Company assets are \$5,000,000 where in 1935 they were \$125,000. Employees have grown from 60 a decade ago to 1,800. The airline expects to be using C-54's soon.

Great Expansion Of Services Due

International and domestic air transport operations will expand greatly in the early months of 1946 if present plans of several carriers materialize on schedule.

American Overseas Airlines intends to extend its trans-Atlantic service to the Netherlands and Germany by Jan. 15 and to Sweden and Denmark by Feb. 1. Service to London started daily status last week with a sixth schedule added Dec. 26 and a seventh—the maximum allowed weekly under the agreement with the United Kingdom—added Dec. 26.

Norfolk Service—Resumption of service to Manila by February,

with four flights weekly by Min. 1, is the goal of Pan American Airways. PAA recently made an initial survey flight to arrange for reestablishment of passenger facilities along the pre-war route—San Francisco to Los Angeles to Honolulu to Midway to Wake to Guam to Manila—it will operate.

Domestic service extensions are highlighted by PCA's announcement that, effective Jan. 1, new schedules will provide an immediate 30 percent increase in seats available. Number of PCA arrivals and departures at major terminals will be stepped up, Detroit having 98 daily, Pittsburgh and Washington 66 daily, Cleveland 44 daily, Norfolk 38 daily. PCA also will originate 16 flights daily at Chicago, and give "daily commuter expense service" between Detroit and Milwaukee by adding a flight daily.

National—National Airlines is seeking CAB approval of revised schedules to make possible, about mid-January, daily round-trip service between Dayton Beach, Fla., and Miami, Tampa, Jacksonville, New Orleans, Charleston, New York and other intermediate points along its routes. Lockheed Lodestars will be used at the start of this service, with Douglas DC-4's in use later between Miami and New York.

Meanwhile, PCA and TWA, planning to resume service into Newark on Jan. 1, will be delayed by postponement of the opening by city authorities until Feb. 3.

Passenger Handling Speeded By United

United Air Lines' trouble with the passenger-handling problem facing all air carriers has resulted in a system that has cut handling time per passenger from almost five minutes to two.

The method devotes from established practice principally in elimination of passenger manifest and simplification of ticketing and flight check-in. First tried at Washington and Chicago, it was extended to Boston, Cleveland, Omaha, Denver and Chicago, and will be in operation over OAL's entire system by Jan. 1, under present plans.

Method—The plan is described by R. F. Magruder, vice president in charge of passenger service, as part of a program to speed handling of both passengers and cargo. Under the new method, a mul-

500 Crossings

The Royal Canadian Air Force 15th Transport Squadron completed its 500th Atlantic crossing this month, when an RCAF Liberator arrived at Ottawa from England. First crossing by the squadron was made two years ago in the day.

typical check-in operation at terminals permits passengers to report at any counter for any flight. The manifest system designates specific counters for specific flights and results in queuing of passengers at time for departure. United's tickets will contain passenger's name, weight and destination and other information that previously went on the manifest. The passenger is also checked in by number, not by name, the number being entered on the ticket as a gate pass after the passenger agent has checked the reservation and received validation from a departure control clerk.

Gate Seating—"Go-shows" can be substituted for "no-shows" easily, United says, by assigning them official validation numbers.

A new type reservation card does duty as departure control record, manifest for revenue accounting and permanent trip record. When the day ends, cards for all flights are mailed to the line's central accounting office at Chicago. Accounting records are completed in 10 days after the end of the month, instead of up to three months as previously.

Area Route Cases Yet To Be Decided

CAB action on recommendations may cut experimental pattern for future expansion.

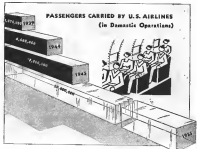
With none of the 11 area route cases decided at the end of the year, CAB has before it numerous recommendations which if adopted not only will substantially increase existing air service but may set a pattern, on an experimental basis, for future expansion.

Board committees to date have recommended establishment of several feederline systems on a trial basis. Decisions in these regional cases are awaited with keen interest for disclosure of Board policy. Should CAB liberally authorize a number of feederlines in various sections of the country and their operation prove sufficiently successful to warrant permanent certification, foundation would be laid for a domestic air transport system of a relatively few trunkline carriers suggested by feeder services.

Combination—Also of interest will be CAB's decision in the West Coast case on a recommendation for combined passenger-pickup service yet to be tested in actual operation.

Complexity of the area cases is well illustrated by figures showing that each averages about 30 applicants, proposing service to more than 350 communities.

Year-end Status—Cases awaiting decision are: West Coast, Rocky Mountain, and Florida, awaiting



Air Passenger Traffic Forecast: Graph shows that Civil Aeronautics Administration expects 25,000,000 passengers annually to be flying the domestic airways by 1955.



THE "CONNIE" AND THE CAP:

To show the use of the Constellations it will use on its international route, TWA recently used the ship in which a group of sailors made a prewar flight to Paris as backdrop for a Civil Air Patrol trainer. The two-place ship is used by a CAP squadron that has classrooms space in a TWA office building. The Lockheed can carry 47 passengers in ocean service or 51 domestically.

The Vital Need For Air Marking

There is ample evidence for the belief that to support an expansion of safe private flying, it will not be enough to obtain simplified regulations, better aircraft, more airports, and the other things on which government and industry have been lavishing most of their efforts.

When seasoned and skilled private flyers in a radio-equipped plane can become lost, as has happened, there is a demonstrable need for a nation-wide, coordinated program of air marking—the lettering of roofs of buildings with the names of towns and the direction of the distance to the nearest airport.

In the face of that need, here is the present situation:

For understandable reasons, air markers were obliterated or permitted to become unrecognizable when this country went to war. Although the information is admittedly sketchy, CAA now has reports on only 262 air markers in the entire country:

The only state with an official, organized program is Connecticut, yet it has only 37 markers:

The best marked state is North Carolina, with 111—thanks to the Civil Air Patrol, headed by Lt. Col. Frank E. Dawson:

Few other states, among which are Alabama and Pennsylvania, seem to be showing any great interest in air marking programs:

The CAP is, and for sometime has been, the most active organization in pushing air marking programs, with large petroleum companies apparently second, six of these now working on plans for programs, some in conjunction with the CAP:

CAA, the organization charged by law with promoting aviation—and safety in aviation—has an air marking section which consists of Mrs. Blanche Noyes and one assistant, and no funds.

This is not the fault of CAA. It has in the past asked for funds for air marking activities, and been refused. CAA's belief, for which a good case might be made, is that air marking should be a cooperatively financed program of the federal government and the states, such as it proposes to do with airports. With that in view, CAA in its budget estimates for the fiscal year 1947 requested \$270,100 for air marking.

The Budget Bureau is of the opinion that air marking should be the exclusive concern of the states. It trimmed the amount requested to \$25,000 which, if approved by Congress, will enable CAA to mark the roofs of some of its own radio buildings.

Despite that basic conflict in views—which should, however, be resolved in public debate in Congress and not in private sessions between CAA and Budget Bureau officials—there seems to be no quarrel with the thesis that air markers are a vital need in private flying. It would seem pertinent to suggest that government, the industry, and private flying organizations give more consideration to plans to fulfill that need.

Mrs. Noyes has done a magnificent job, which as poverty of facts or markers can belittle. Most of her time is spent flying about the country, enlisting the aid of governors, state commissions, civic organizations and others—to many of which she has to explain air markers and sell their need.

But neither Mrs. Noyes, the CAP, the oil companies, nor a few states can do the job unaided. Perhaps CAA eventually will obtain sufficient funds to launch the nation-wide campaign it has long desired. Pending that time, the work will have to be done in the states. This is an enterprise well worthy of intensified attention of aviation organizations with community branches.



Flight 5 and the helpful ghost



Aerojet Engineering Corporation
285 West Colorado Boulevard
Pasadena, California

Stranded in heavy fog, darkness and a beating rain—most flights cancelled! Take off blind under such conditions is too great a hazard. Instruments lag and pilot reaction together amount to seconds . . . critical seconds badly needed for safety margin.

But there down the runway comes Flight 5—a ghost of whitish vapor swirling out behind her. She's van about

1500 feet. Suddenly the fog plane rises sharply—with AeroJet take-off assistance—a downward feet more or than usual! Up and away, long before required . . . and carrying a heavier payload, too.

Interested in jet-assistance for your operations? Then write AeroJet today for information you've been wanting. It's in the factual booklet, "Report from AeroJet."



THE POWER OF THE FUTURE... **AeroJet**

AEROJET ENGINEERING CORPORATION • AFFILIATE OF THE GENERAL TIRE & RUBBER CO



BOY AT THE BIG DESK...

Airline Maintenance Manager, or maybe the title on the door reads Purchasing Agent . . . File cases full of parts catalogs, specification sheets, price lists. Plenty of help to do the detail, rap out requisitions and reply to yours of recent date . . . Supply must be a cinch when you have a high ranking How-To-Get-It-Man in charge!

Well now, want to know something? The boy at the big desk for the airline usually says "Air Associates" when he wants something fast—lets us do his worrying, finding and forwarding. Saves time, money and overhead doing business with AA . . . And if we can give satisfaction and service on airline wants, what are you worrying about?

ONE SOURCE



Air Associates has everything, or knows where to get it. Five warehouses, strategically pin-pointed for service, are within a day's distance from most parts of the U.S. Teletype tie-up assembles your order quickly from the nearest stock bin or manufacturer. Orders are filled fast, shipped fast. One order can cover all current needs. One invoice saves office work and overhead. Airline or service operator, big order or little, gets the same priority, service, speed. Skip the grief and get the breaks—by doing business with...

AIR ASSOCIATES
INCORPORATED

... suppliers to the industry since 1927
... engineers and manufacturers of aircraft specialties
... TETERBORO, N. J. Branches—Atlanta, Chicago, Dallas, Los Angeles